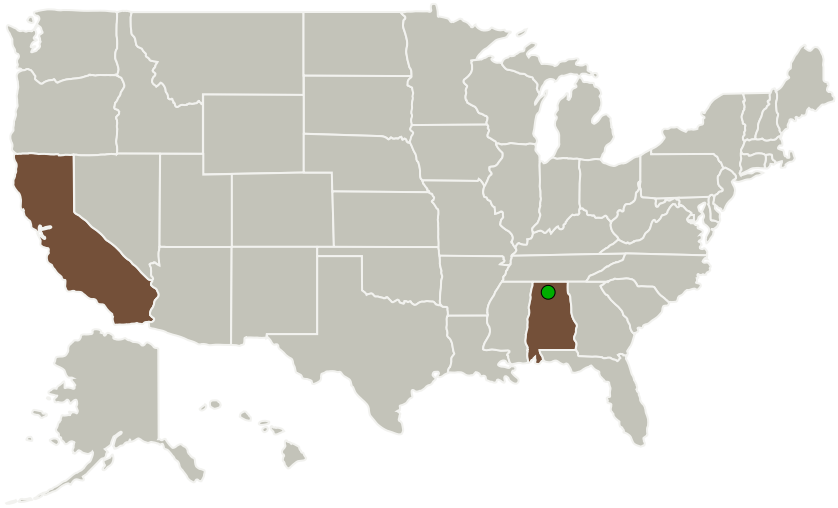
3D Manufacturing of Integrated Heat Exchangers, Phase I

Completed Technology Project (2017 - 2017)

Project Introduction

This NASA SBIR Phase I proposal presents an unprecedented method to do additive manufacturing of integrated heat exchangers for pumped fluid loop with a femtosecond (fs) fiber laser. It is the enabling technology for 3D manufacturing of high thermal conductivity materials. With our successful history in ultrafast laser AM and SM processing, this proposal has a great potential to succeed. A proof of concept demonstration will be carried out at the end of Phase 1. A prototype will be delivered at the end of Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Polaronyx, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	San Jose, California
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	California

3D Manufacturing of Integrated Heat Exchangers, Phase I Briefing Chart Image

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Images

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(https://techport.nasa.gov/image/126739)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Polaronyx, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

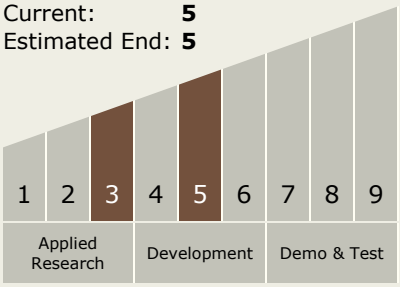
Carlos Torrez

Principal Investigator:

Jian Liu

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.2 Heat Transport